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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/801,773	03/09/2001	Osamu Kuroda	Q61192	4550

7590 03/31/2005

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3202

EXAMINER	
LEE, SHUN K	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/801,773	KURODA ET AL.	
	Examiner	Art Unit	
	Shun Lee	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,3,5-14,16 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2,3,9,11,12 and 16* is/are allowed.

6)☒ Claim(s) *5,6,8,10,13,14 and 17* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11 January 2005 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Newman *et al.* (US 5,420,441).

In regard to claim **10**, Newman *et al.* disclose (column 7, lines 42-47; Fig. 6) a storable fluorescent inspection sheet (106) having stored and recorded a radiation inspection image (*e.g.*, having a rectangular shape; see Fig. 11) that has a density pattern in which one or more low-density and high-density regions having a contrast difference of at least 1:20 (*i.e.*, cascading six lead masks with each 0.05 mm lead layer resulting in a roughly 30% x-ray modulation depth; column 6, lines 54-66; thus providing transmissions ranging from 1 to 0.03; column 8, lines 39-40) are arrayed in a horizontal scanning direction.

While the sheet of Newman *et al.* lacks an explicit description of a contrast difference of at least 1:50, Newman *et al.* also disclose (column 1, lines 49-53) that it is desirable for the method to provide analysis of the exposure latitude and photometric response linearity over the 10,000:1 storage phosphor dynamic range. Newman *et al.* further teach (column 2, lines 28-46; Fig. 6) that a special test target (104) is used to expose a storage phosphor cassette (*i.e.*, storable fluorescent inspection sheet 106) which is then read and analyzed. Therefore it would be obvious to one of ordinary skill to expose the inspection sheet of Newman *et al.* with a 1:10,000 contrast difference test target and to analyze the 10,000:1 contrast difference radiation inspection image stored therein, in order to determining scanner performance (*e.g.*, exposure latitude and photometric response linearity) over the 10,000:1 storage phosphor dynamic range.

5. Claims 5, 6, 8, 13, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman *et al.* (US 5,420,441) in view of Farrokhnia *et al.* (US 6,231,231).

In regard to claims **5**, **6**, and **17**, Newman *et al.* is applied as in claim 10 above. The method of Newman *et al.* lacks that the boundary line between the low-density and high-density regions extends between opposite edges of the sheet and is a straight line inclined (*e.g.*, on a diagonal) with respect to the horizontal scanning direction and that the density pattern includes two high-density regions and one low-density region in the order of one high-density region, the low-density region, and the other high-density region arrayed in the horizontal scanning direction. However, test targets are well known in the art. For example, Farrokhnia *et al.* teach (column 7, lines 25-58) to incline the straight boundary lines between a plurality of low-density and high-density regions with respect to the horizontal scanning direction in order to determine both horizontal and vertical MTF in an x-ray system. Therefore it would be obvious to one of ordinary skill to incline the straight boundary lines (*e.g.*, on an image diagonal) in the method of Newman *et al.* between a plurality of low-density and high-density regions with respect to the horizontal scanning direction, in order to determine a plurality of horizontal and vertical MTF along a line from one radiation inspection image edge to the opposing radiation inspection image edge.

In regard to claims **8** and **14** which are dependent on either claim 5 or claim 6, Newman *et al.* disclose (column 6, lines 57-63; column 7, lines 42-47; Fig. 6) disposing a radiation transmittable member (104) at a position corresponding to said density

pattern on a storable fluorescent sheet (106), the radiation transmittable member (104) having a radiation transmission factor which corresponds to said contrast difference; and storing and recording said radiation inspection image in said storable fluorescent sheet (106), by illuminating said storable fluorescent sheet (106), on which said radiation transmittable member (104) has been disposed, with a dose of radiation that corresponds to said contrast difference (*i.e.*, single photographing).

In regard to claim **13** which is dependent on claim 8, the method of Newman *et al.* lacks that the radiation transmittable member partially overlaps said storable fluorescent inspection sheet. However, Newman *et al.* also disclose that there exists clear regions (*e.g.*, 4 in Fig. 5) which are used for certain analysis (*e.g.*, FFT; column 7, lines 15-18; column 13, lines 25-40). Therefore it would be obvious to one of ordinary skill to provide a radiation transmittable member partially overlaps said storable fluorescent inspection sheet in the method of Newman *et al.*, in order to obtain a plurality of clear areas (*e.g.*, a region where the radiation transmittable member does not overlap the storable fluorescent inspection sheet) for analysis of regions where unattenuated incident radiation has been recorded.

Allowable Subject Matter

6. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 2, 3, 9, 11, 12, and 16 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to an nonobvious improvement over the invention patented in US Patent 5,420,441. The improvements comprise in combination with other recited elements: (a) detecting whether noise occurs in the form of a line in the vertical-scanning direction in the low-density region of an image reproduced from the image inspection signal, and judging that stray light has occurred if the noise occurs and that stray light has not occurred if the noise does not occur, based on the detection of the noise; and (b) repeating the disposition of a radiation shielding member on a storable fluorescent sheet and the illumination with a radiation dose that corresponds to a contrast difference, until a density pattern is obtained.

Response to Arguments

9. Applicant's arguments filed 11 January 2005 have been fully considered but they are not persuasive.

Applicant argues (section I on pg. 8-11 of remarks filed 11 January 2005) that Newman *et al.* do not have low-density and high-density regions having a contrast difference of at least 1:50 arrayed in a horizontal scanning direction. Examiner respectfully disagrees. Newman *et al.* state (column 8, lines 11 and 12) that "The corner points are located by a differential contrast edge detection algorithm" and (column 10, line 44 to column 11, line 34) that "Flare light is a collector 80 (FIG. 3) artifact which reduces the contrast of an image due to unwanted backscatter entering the collector 80 from neighboring bright regions. The flare light ratio is measured by averaging the dark signal value in region (6) (FIG. 5) of the test target which is

surrounded by bright regions, with that of region (4). The ratio of the two signal levels gives the percentage of flare light susceptibility for high contrast regions ... The algorithm locates corners and edges in the scanned image using a histogram threshold method. The histogram is defined by evaluating the parameters <H> and <L> which are respectively the average count values for the high and low transmission regions defining the symbol of interest. A binary histogram is then defined by the threshold transition value: T=(<H>+<L>)/2 ... The reader 10 assigns count values which correspond to the beam transmission in logarithmic "milli-density" units. Thus, if the beam transmission is attenuated by a factor of "X", the scanner assigns the value of Count=max_count+(log(X)*1000) where max_count=3200 typically, and 0<X<1. As an example, absolute transmission values of X=1.0, 0.1, 0.01, and 0.001 results in count values of 3200, 2200, 1200, and 200, respectively, for a well calibrated scanner. Thus, the count value is an increasing function of the transmission, and (by definition) a decreasing function of attenuation ... The lines defining the three orientation corner points (1,2,3) (see FIG. 5) are comprised of six lead foil layers, and will therefore have the maximum absorption (minimum transmission) signal in the scanned target image. The program first determines the <H> and <L> values for this region by averaging the highest and lowest code values in the first 20 lines of the image, and defines the histogram threshold value T ... ". Thus it is clear that Newman *et al.* teaches analysis of low-density and high-density regions having a contrast difference (*i.e.*, determining average count values for the high and low transmission regions defining the symbol of interest) with the example of absolute transmission values of X=1.0, 0.1, 0.01, and

0.001 (*i.e.*, the stored radiation inspection image of the symbol of interest having a contrast difference of 1000:1).

Applicant argues (section II on pg. 11-13 of remarks filed 11 January 2005) that there is no need to examine every point along a line between opposite edges since one point and only a few neighboring points thereof are required to be examined with respect to either dimension. Examiner respectfully disagrees. Newman *et al.* state (column 9, lines 45-48) that "Geometric linearity of the scan is the measure of the degree of geometric distortion, i.e. an unwanted enlarging or demagnification of any or all parts of the scanned image" and (column 13, lines 10-24) that "An MTF, Modulation Transfer Function, will be used to determine the spatial discrimination of test target line pairs. The MTF function will return a modulation number with a value 0≤mod. num≤1.0 with 1.0 as perfect resolution and 0 as no resolution of line pairs. This, along with the average high and average low pixel values, will be calculated for three patterns on the test target, two in the fast and one in the slow scan directions, with line spacing of 1.0 LPM for the upper horizontal pattern and 0.5, 1.0 and 2.0 for the lower horizontal and vertical patterns. The MTF numbers shall be displayed in a tabular form along with expected values. A plot of the actual values with the best fit Lorentzian curve and the expected Lorentzian curve shall be displayed". Thus Newman *et al.* teach MTF and geometric distortion determination at multiple portions of the scanned image. Therefore Newman *et al.* suggest that an examination of every point along a line between opposite edges is desirable since unwanted enlarging or demagnification (and related MTF changes) of any or all parts of the scanned image can occur.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL

CONSTANTINE HANNAHER
PRIMARY EXAMINER
GROUP ART UNIT 2878